

REMARKS

Applicants request favorable reconsideration and withdrawal of the rejections set forth in the above-mentioned Office Action in view of the foregoing amendments and the following remarks.

Claims 5-24, 26, and 27 remain pending, with claims 5, 9, 13, 17, 21, 26, and 27 being independent. Claims 9-16 and 21-24 stand withdrawn from consideration as being directed to a non-elected invention. Claims 5, 17, 18, 26, and 27 have been amended. Support for the amendments can be found throughout the originally-filed disclosure. Accordingly, Applicants submit that the amendments do not include new matter.

Claims 5-8 and 26 are rejected in the Office Action under 35 U.S.C. § 103(a) as being unpatentable over Hamasaki (U.S. Patent No. 5,187,583) in view of Suzuki (U.S. Patent No. 5,828,407) and Takahashi (U.S. Patent No. 5,955,753). Claims 17-20 and 27 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Gowda et al. (U.S. Patent No. 6,344,877) in view of Kline et al. (U.S. Patent No. 5,134,428).

Applicants respectfully traverse the rejections, and submit that the claimed invention is patentably distinguishable from the cited references for at least the following reasons.

Independent Claims 5 and 26

Amended independent claim 5 recites an image pickup device comprising, inter alia, a drive circuit controlling a transfer switch such that the drive circuit supplies the transfer switch with a signal of a first level to set the transfer switch to be in an OFF period by maintaining the signal at the first level for the OFF period, and supplies the transfer switch with a signal of a

second level to set the transfer switch to be in an ON period by maintaining the signal at the second level for the ON period, such that a fall speed of changing from the second level to the first level is slower than a rise speed of changing from the first level to the second level.

Amended independent claim 26 recites a drive method with analogous features.

With respect to independent claims 5 and 26, the Office Action cites Hamasaki as disclosing many of the features of these claims. The Office Action acknowledges, however, that Hamasaki does not disclose or suggest a drive circuit controlling a transfer switch such that a time during which the transfer switch changes from an ON state to an OFF state becomes longer than a time during which the transfer switch changes from the OFF state to the ON state.

The Office Action further asserts, however, that Suzuki discloses controlling a transfer switch configured so that a time during which the transfer switch changes from an ON state to an OFF state becomes longer than a time during which the transfer switch changes from the OFF state to the ON state. In this regard, the Office Action cites Figure 4 of Suzuki, and asserts that the time period from t2 to t7 represents changing from an ON state to an OFF state, and that the time period from t1 to t2 represents changing from an OFF state to an ON state.

Applicants respectfully traverse this factual finding in the Office Action with respect to Suzuki. In Suzuki, the time period t3 to t6 is the “READ OUT” period, which presumably equates to an “ON state” wherein the signal is at a “second level,” in terms of the claimed invention. See Figure 4; col. 9, lines 40-63; col. 11, lines 1-14. It is therefore incorrect to equate the entire time period from t2 to t7 as representing changing from an ON state to an OFF state, as is done in the Office Action. More specifically, during the time period from t3 to t6 there is no

change between ON and OFF states. Instead, the device of Suzuki is simply in the ON state between t3 and t6. Similarly, in the time period from t1 to t2, device is in an “OFF state,” not changing from an OFF state to an ON state.

Along these lines, Applicants submit that Suzuki only appears to show changes between OFF and ON states as singular time points. For example, a change in state occurs at t3 in Figure 4, which Suzuki describes as “t3, the time when the charge transfer V3 is changed to the high voltage V_H .” Col. 9, lines 23-24. This disclosure does not indicate any particular speed that the change occurs, rather it simply notes that it occurs at a time (t3) relative to other points. In graphical terms, the “speed” is simply the vertical line at t3 in Figure 4. Without any indication of a duration in which the changes in state take place, Applicants submit that one of ordinary skill in the art would not understand Suzuki to disclose or suggest the relationships the rise and fall speed between first and second levels recited in amended independent claims 5 and 26.

Applicants further submit that the other citation to Takahasi fails to cure these deficiencies in Hamasaki and Suzuki. That is, Takahasi does not disclose or suggest the relationships the rise and fall speed between first and second levels recited in amended independent claims 5 and 26.

Accordingly, for at least the foregoing reasons, Applicants submit that the combination of Hamasaki, Suzuki, and Takahasi fails to disclose or suggest the invention recited in amended independent claims 5 and 26.

Independent Claims 17 and 27

Amended independent claim 17 recites an image pickup device comprising, inter alia, a drive circuit controlling a transfer switch such that the drive circuit supplies the transfer switch with a signal of a first level to set the transfer switch to be in an OFF period by maintaining the signal at the first level for the OFF period, and supplies the transfer switch with a signal of a second level to set the transfer switch to be in an ON period by maintaining the signal at the second level for the ON period, such that a fall speed of changing from the second level to the first level is slower than $10 \text{ V}/\mu\text{sec}$. Amended independent claim 27 recites a method with analogous features.

The Office Action cites Gowda et al. as disclosing some of the features of independent claims 17 and 27. The Office Action acknowledges, however, that Gowda et al. does not disclose or suggest the previously claimed feature that the transfer switch changes from an ON state to an OFF state in a relation of $10 \text{ V}/\mu\text{sec} > V_{\text{off}}$. The Office Action further finds, however, that Kline et al. suggests this feature, specifically citing to col. 6, lines 29-37 of the reference. The Office Action concludes that it would have been obvious to one of ordinary skill in the art to modify Gowda et al. based on the disclosure of Kline et al.

Applicants submit, however, that the combination of Gowda et al. and Kline et al. fails to disclose or suggest the combination of features recited in amended independent claims 17 and 27, and in particular, a configuration wherein “a fall speed of changing from the second level to the first level is slower than $10 \text{ V}/\mu\text{sec}$.” Notably, the portion of Kline et al. at col. 6, lines 29-37, cited in the Office Action refers to a “ramp signal” that is approximately $20 \text{ V}/\mu\text{sec}$. Applicants

do not understand the ramp signal to equate to the claimed fall speed. In any event, the ramp signal is clearly greater than the claimed fall speed of slower than 10 V/ μ sec.

Applicants additionally note that in the present invention, the slower fall speed may aid in suppressing undesirable residual images. See, e.g., specification at p. 22, line 18 through p. 23, line 7. Neither Gowda et al. nor Kline et al. discloses or suggests such a relation between fall speed and undesirable residual images.

Accordingly, for at least the foregoing reasons, Applicants submit that the combination of Gowda et al. and Kline et al. fails to disclose or suggest the invention recited in independent claims 17 and 27.

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The other claims are allowable by virtue of their dependency and in their own right by reciting further features of the invention. Individual consideration of the dependent claims is respectfully requested.

In view of the foregoing amendments and remarks, it is respectfully submitted that the application is in condition for allowance. Favorable reconsideration and early passage to issue of the application are earnestly solicited.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

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